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HB SYNTHESIS OF HUMAN LEUKEMIA DERIVED CELL LINES. A. E. Felice*, E. Marino*, J. Kraus* and V.C. McKie* (intr. by E.C. Abraham). V.A. Medical Center and Depts. of Cell and Molecular Biology, Pathology and Pediatrics, Medical College of Georgia, Augusta, GA.

K562 is a pluripotent human leukemia cell line that spontaneously produces variable numbers of hemoglobinized progeny. The production of Hb by K562 cells is usually enhanced by Hemin and some other compounds. Hemin stimulates the production of the embryonic Hb Gower I (or $\varepsilon_2\zeta_2$), Hb Gower II (or $\alpha_2\varepsilon_2$), Hb Gower III (or $\varepsilon_2\gamma_2$) and Hb Portland I (or $\zeta_2\gamma_2$) and the fetal Hb F (or $\alpha_2\gamma_2$) and Hb Bart's (or γ_4). The γ globins are a mixture of G_γ, $A_\gamma I$ and $A_\gamma T$ globins. The Hb composition varied among 22 experiments without regard to passage number, Hemin dose, proportion of serum or the cell density. It is likely that Hemin augments the expression of a pre-established, though unstable, program of Hb synthesis. When the cells produced predominantly embryonic globins [$(\varepsilon + \zeta) > 70\%$], the ε/ζ and the $\Sigma\alpha/\Sigma$ non-α ratios were balanced. When the cells produced predominantly γ globins [$(\varepsilon + \zeta) < 30\%$], the major Hb in culture was Hb Bart's due to severe deficiencies of α globin. The $\Sigma\alpha/\Sigma$ non-α ratio was severely imbalanced. Despite the diversity of γ globin levels, the ratio of G_γ and A_γ globin produced was constant ($G_\gamma \approx 56.5\%$). A new cell line FM-4 was obtained from the peripheral blood of a 4½ yr old Black boy with Ph-ive AML. The patient was in terminal stage with multiple organ relapse 2 years after diagnosis. The FM-4 cells reacted moderately to strongly positive for myeloperoxidase, sudan black B, ANAE and CE spontaneously and after exposure to a number of compounds. FM-4 cells did not produce Hb but FM-4 conditioned medium inhibited the Hb production of K562 cells.

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